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Note: This leaflet is for desk reference. See "The Computation of Acreage Under Production Control Contracts" for explanation and tables.

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HOW TO COMPUTE FIELD ACREAGE

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U. S. Department of Agriculture

There are only two steps to computing field acreage. The first step is computing the area in square units of measure from the linear measurements. This step is exactly the same for feet, chains, or wheel revolutions. Treat them all just as numbers to be multiplied. The second step is the changing of the square measure to acres for which there is a simple rule for each of the three kinds of measure. The two computations will be explained separately.

I. Computing the Area in Square Measure

1. For fields with Three or Four sides.

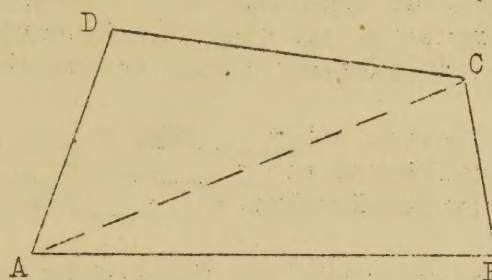


Figure 1. A four sided field.

*Side AB x Side BC x value of angle B = Area triangle ABC.
Side CD x Side DA x value of angle D = Area triangle CDA.
The angle values are read from the "Half-sine Table".
Area ABC plus Area CDA = Area ABCD in square measure.

2. For fields with Five or more sides.

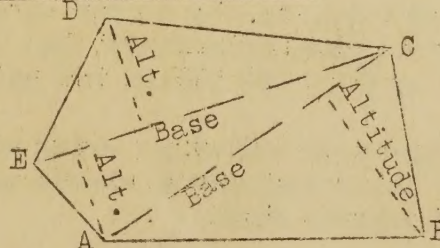


Figure 2. A five sided field.

*Plot the field area to scale on paper.
Divide the field into triangles by drawing diagonals.
Measure the bases and altitudes with the scale.
The area of one triangle = $\frac{1}{2}$ base x altitude.
The area of the field = the sum of the triangle areas.
This answer will be in square feet, square chains, or square units of wheel measure, corresponding to the linear measure of the sides.

II. Changing Square Measure to Acres

1. To change square feet to acres.
Acres = Square feet divided by 43,560.
2. To change square chains to acres.
Acres = Square chains divided by ten.
3. To change square measure of wheels to acres.
Acres = Square measure divided by (item 9)² x 10.
**Item 9 squared and multiplied by ten is equal to one acre.

* The side measurements used in either computation or plotting must be "True Lengths." If no slope measurements are given for a side, the measured length is accepted as the "True Length". More than half the field lines are probably in this class in any part of the country. But for those with slope measurements the "True Length" must be found before undertaking step I.

"True Length" = Side "As measured" less slope error.

The slope error must be in the same linear unit measure as the side before it can be subtracted. Hence to obtain slope error

1. Slope error in Feet = _____ yds. x _____ % x 3.
 2. Slope error in Chains = _____ yds. x _____ % x .045.
 3. Slope error in Revolutions = _____ yds. x _____ % x item 9
- 22

The yards are read from the field note card.

The per cent is read from the "Slope Table".

The 3 changes yard measure to feet.

The .045 changes yard measure to chains.

Item 9 divided by 22 is a decimal number which changes yard measure to revolutions.

** Item 9, on the field note card, is the number of revolutions the wheel makes in one chain. It is obtained in a field test by dividing the number of revolutions in one mile by 80. (80 chains = 1 mile).

A card listing the names of surveyors using wheel measure and bearing the values relating to their respective wheels should be posted conveniently near the office worker's desk.

The following form is suggested:

Name	Item 9	Item 9 - 22	(Item 9) ² x 10
John Allen	9.179	.42	842.54